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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,745	06/30/2003	Canan Uslu Hardwicke	121278-1	1348

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GENERAL ELECTRIC COMPANY  
GLOBAL RESEARCH  
PATENT DOCKET RM. BLDG. K1-4A59  
NISKAYUNA, NY 12309

EXAMINER

ABRAMOWITZ, HOWARD E

ART UNIT PAPER NUMBER

1762

DATE MAILED: 03/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/611,745	<b>Applicant(s)</b> HARDWICKE ET AL.	
	<b>Examiner</b> Howard E. Abramowitz	<b>Art Unit</b> 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08 February 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

Applicant's amendments filed 2/8/06, have been fully considered and reviewed by the examiner. The examiner notes that claims 1 and 17 have been amended and claims 24-26 have been added. Currently, claims 1-26 are pending in this application.

### ***Response to Arguments***

Applicant's arguments filed 2/8/06 have been fully considered but they are not persuasive.

The applicant has argued that the slot of Bunker does not extend outwards from the wall of the component arguing that the slot extends partly inwards.

The examiner notes that the slot is described as extending partly inwardly and perpendicular from the second surface. However, it is argued that this slot is formed by applying a film over the surface (wall) of the component. In this manner the slot extends inwards from the surface of the coating (73) but extends outwards from the wall of the component (62) that existed before the coating was applied. As the deposition of this layer forms the slot (flow director), the flow director extends outwards from the initial wall of the component.

### ***Claim Rejections - 35 USC § 112***

Claims 25 and 26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter

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which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 25 recites the limitations that the hot gas path surface comprises wheelspaces, angelwings, a rotor surface or combustor liners, and that the component comprises a steam turbine, a compressor or a heat exchanger. None of the surfaces or the components are mentioned in the specification. Claim 26 recites that the flow director comprises an airfoil trailing edge bleed slot flow director, this component is not mentioned in the specification.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 10-20 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Bunker et al. (US Patent No. 6,234,755).

Referring to claim 1, Bunker et al. discloses a method for forming a flow director (by forming a slot over the holes) on a component comprising a wall, depositing at least one layer on the wall of the component wherein the deposition includes shaping the layer(s) in accordance with the predetermined shape of the flow director (the slot) the formed layer extends outwards from the initial wall of the component (column 2 lines 20-24, lines 50-60).

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Referring to claim 2, Bunker et al. discloses that the deposition comprises depositing a plurality of layers (column 2 lines 61-67) and shaping the layers using a mask to form the flow director, the slot (column 2 lines 50-60).

Referring to claim 3, Bunker et al. discloses the wall has a cold surface and a hot surface (column 4 lines 15-20) with holes extending through the wall for flowing a coolant from the cold surface to the hot surface, and the deposition comprises depositing the layer(s) on the hot surface wall (column 4 lines 5-30, column 5 lines 47-67).

Referring to claim 4, the flow director (the slot) comprises a method of directing the coolant flowing out of the exit site and towards the hot surface of the wall (column 2 lines 13-24) thus the coating acts to form the slot and modifies the flow of the coolant gas.

Referring to claim 5, the flow director comprises a ridge extending along at least a portion of the exit site and further extending to a position downstream of the exit site (figure 4).

Referring to claim 10, the deposition can be more than one layer thus it is formed a plurality of times (column 2 lines 61-67) and is done on more than one hole thus it is formed on a plurality of positions and forms a plurality of flow directors on the wall of the component (column 4 lines 63-54).

Referring to claims 11, 12 and 13 one layer can comprise a metal while another layer comprises a ceramic (column 2 lines 61-67).

Referring to claim 14, the component can comprise a secondary coolant slot (figure 6) in the substrate and this is enhanced by the flow director (the film on top of the slot) as this film makes the slot have a deeper depth and thus enhances the secondary coolant flow (column 9 lines 59-67).

Referring to claim 15 the deposition can be done using CVD or PVD (column 5 lines 47-67).

Referring to claim 16, Bunker et al. discloses that there is a masking step (column 2 lines 50-60).

Referring to claim 17, all the features of this claim have been discussed above except that the part is a turbine component which is disclosed in column 2 lines 13-24.

Referring to claim 18, Bunker et al. discloses forming a plurality of layers on the wall and shaping the layers in a predetermined shape to form the flow director (column 2 lines 50-60).

Referring to claims 19, 20 and 23 these claims have been described previously above.

Referring to claim 24, Bunker et al. discloses that the protective coating is formed on the hot gas path surface of the component (column 2 lines 40-45).

Referring to claim 25, Bunker et al. discloses that the surface is for a turbine engine airfoil and angelwings are inherently part of the airfoil, since there is heat exchange occurring between the hot and cold surfaces of the component, the component is a heat exchanger as well (column 1 lines 11-20, column 2 lines 39-49)

Referring to claim 26, the coating is for an airfoil on a turbine engine and configured to direct the coolant towards the hot surface.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 6-9, 21 and 22 rejected under 35 U.S.C. 103(a) as being unpatentable over Bunker et al. in view of Sabol et al. (US Patent No. 6,060,174).

Referring to claims 6 and 21, Bunker et al. discloses all of the features of the claims as discussed above except it does not disclose delivering a mixture through a nozzle onto the wall to form the layer wherein the mixture comprises a powder

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dispersed in a liquid medium. However, Sabol et al. teaches that when applying a MCrAlY film it can be applied as a powder slurry in a liquid medium using a slurry spray and that this technique is less expensive (column 3 lines 11-49). Accordingly it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Bunker et al. to use a slurry spray to apply the MCrAlY coating as suggested by Sadol et al. as this method is less expensive.

Referring to claims 7 and 22, the part is a turbine engine part and the layer will be heated upon use of the part.

Referring to claim 8, the nozzle must be displaced relative to the wall in order to spray coat the entire surface this would be done in accordance with the shape of the wall.

Referring to claim 9, the spraying would obviously be controlled so that the wall is coated and not other parts that are not supposed to be coated this would be done in accordance with the shape of the wall.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. 6,817,833 and 6,881,439.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP



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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Howard E. Abramowitz whose telephone number is 571-272-8557. The examiner can normally be reached on monday-friday 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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